"SYNTHETIC STUDIES AND PHARMACOLOGICAL EVALUATION OF OXYGEN CONTAINING HETEROCYCLIC COMPOUNDS"

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Synopsis

Introduction

Compounds classified as heterocyclic probably constitute the largest and most varied family of organic compounds. After all every carbocyclic compound,regardless of structure and functionality, may in principle be converted in to collection of heterocyclic analogs by replacing one or more of the ring carbon atoms of a different element Even if we restrict our consideration to oxygen, nitrogen and sulfur (the most common heterocyclic elements) , the permutations and combinations of such a replacement are numerous.

The majority of pharmaceuticals and biologically active agrochemicals are heterocyhc while countless additives and modifiers used in industrial applications ranging from cosmetics, reprography ,information stQrage and plastics are heterocyclic in nature One striking structural feature inherent to heterocycles which continue to be exploited to great advantage by the drug industry, lies in their ability to manifest substituents around a core scaffold indefineçI three dimensional representations between them sulfur and nitrogen containing heterocyclic compounds have maintained the interest of researchers through decades of historical development of organic synthesis('-'). Synthetic heterocycles have widespread therapeutic uses such as antibacterial, antifungal 1, anti-mycobacterial, trypanocidal , ant iHIV activity antileishmanial agents , genotoxic , antitubercular, antimalarial , herbicidal , analgesic , antiinflammmatory, muscle relaxant, anticonvulsants , anticancer and lipid peroxidation inhibitor hypnotics , antidepressant, antitumor, antihelmintic , and insecticidal agents9 i5)

Medicinal chemistry embellish an important field in chemistry because the bringing between chemistry and the medicinal life matters by trying to study the common diseases and

how should we break it. The branch of modem chemistry has been undertaken for separation and refining active materials from plants, animals and microorganism and their chemical change become the centre of attraction to researchers around the world.

Heterocyclic compounds distribute with heterocyclic compounds which represent about 65% of organic chemistry literature. Heterocyclic compounds are enormously scattered in nature and crucial to life. They play a essential role in the metabolism of all living cells. Hereditary Material DNA is also originated of heterocyclic based pyrimidines and purines. A huge number of heterocyclic compounds both synthetic and natural are biologically active and are in clinical use.

Some of the natural compounds or products or products eg: antibiotics such as penicillin, cephalosporin, alkaloids such as vinblastine, morphine, reserpine etc have heterocyclic affiliation.

One of the reasons for the diffused use heterocyclic compounds is that their structures can be exactly operated to achive particular purpose for alteration in fusion . Many heterocycles can be adjusted into hardly wide groups of structures that have universal indistinguishable their characters can include inequality in acidityoe basicity, identical polarity. The feasible structural differences comprise the alternate of one heteroatom for another ring and different positioning of the same heteroatoms within the ring.

A heterocyclic compound is a cyclic compound that has atoms atleast two different elements as membersos its ring.The compliment of heterocyclic compounds are homocyclic compounds may be in organic most contain atleast one carbon. Since in organic chemistry non- carbons usually

are considered to substitute carbon atoms,they are called hetero atom, meaning different from carbon and hydrogen.

Heterocyclic compounds can be usefully separated based on their electronic structure. The saturated heterocycles comport like the acyclic derivatives Thus piperidine and tetrahydroftiran are conventional amines and ethers with qualified steric profiles Therefore the study of heterocyclic chemistry focalize especially on unsaturated derivatives, the preponderance of work and applications involves relaxed 5 and 6 membered ring included are pyridine focused to benzene rings, which for pyridine, thiophene, pyrrole and furan are quinoline, benzothiophene, indole and benzofuran respectively. The unsaturated rings can be separated according to the participation of the hetero atom in the p1-system

Most of drugs to the class of heterogeneous compounds heterocyclic compounds act as' life-sustaining role in the metabolism of all living cells Large number of themare five and six membered heterocyclic compounds having one to three hetero atoms in their nucleus. The compounds may be pyrimidine and purine basis of genetic materiat,DNA , and these heterocyclic compounds may be isolated or focused heterocyclic systems Some of the common heterocyclic compounds used in the medicines are as amino acids like proline, histidine and tryptophan, the vitamins and co enzymes predecessors such as thiamine, riboflavin pyridoxine ,folic acid ,biotin, B12 and E families of the vitamins There is a hugenumber of pharmacologically alive heterocyclic compounds Many o which are in fixture clinical use The pyrimidines and its derivatives have a life-sustaining role in biological attributes

Heterocyclic compounds played a life-sustaining in biological processes and are all-encompassing as natural products They are broadly found in nature in particularly in nucleic

acids, plant alkaloids, anthrocyanins and flavones as well as in haem and chlorophyll additionally some vitamins, proteins, harmones contain aromatic heterocyclic arrangement Semisynthetic developed heterocycles aimed by organic chemist are used for occurrence as agrochemicals, pharmaceuticals and play important role in human life heterocycles have vast potential are the most promising molecule as found structures for the outline of newdrugs.

Objectives of the study

- To synthesize Biologically active compounds
- To characterize the synthesized compounds employing different spectral tools
- To evaluate the synthesized compounds for their different biological sactivity.

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Research Guide